

# THE MINERAL INDUSTRY OF OTHER COUNTRIES OF EAST AFRICA

By Philip M. Mobbs

## Djibouti<sup>1</sup>

The few reports available in recent years on mineral industry activity in Djibouti indicated intermittent entrepreneurial production of small quantities of construction materials, including clays, sand, gravel and crushed stone, as well as some marble and granite dimension stone, limestone (some of which was at least periodically calcined to lime), and solar-evaporated sea salt. However, other mineral occurrences of economic interest include diatomite, geothermal fluids and mineral salts, gold, gypsum, perlite, pumice, and possibly petroleum. Most of these are near Lake Asal, although some gold shows were farther west near Yoboki and in the south near Ali Sabieh. Oil interest was focused in the south and offshore in the Gulf of Aden.

The Government was trying to attract foreign investors and demonstrated a keen interest in developing the mineral potential. However, no major changes in the status of the mineral industry were expected in the immediate future.

## Eritrea<sup>2</sup>

The minerals industry, including cement and petroleum refinery production, was not yet a significant factor in the economy of Eritrea. The country's mineral facilities included an 18,000-barrel-per-day (bbl/d) petroleum refinery at Assab and a 45,000-metric-ton-per-year (t/yr) cement plant at Massawa, the country's main Red Sea port, with associated quarries for limestone, clay or shale, and gypsum. In addition there are solar-evaporation sea salt plants near Massawa and Assab, each said to have capacities of more than 100,000 t/yr, although production was variously reported at 15,000 to 30,000 t/yr for each; and quarries for dimension stone (granite and marble) and sources of silica sand and other raw materials for a 20-metric-ton-per-day glassworks in Asmara. The Government officially reported 59 kilograms (kg) of gold production in 1995. However, artisanal gold production was estimated in one report at about 300 kilograms per year (kg/yr) of unspecified purity from many deposits (probably mostly alluvial) spread over a large area in the southwestern hills; other reports indicated much larger output, most of which was sold outside official channels. Crude construction materials (clays, gravel, laterite, sand, and stone) were produced for local use throughout the country, and small

quantities of lignite were mined southwest of Asmara.

Additional mineral occurrences having some potential for development included chromium minerals in the west; a small, high-grade deposit of sulfide copper with gold and other metallic minerals in similar rocks south of Asmara; many primary gold deposits in quartz veins and schists of the Precambrian terranes just west of Asmara; petroleum along the mostly desert coastal plain and in the Dahlak Islands offshore Massawa; and potash in the Danakil Depression southeast of Asmara.

The Government was making an effort to attract foreign investors and was especially interested in the mining and petroleum sectors, which were considered to have good potential for improving the economy. A petroleum operations code was issued in July 1993, and a general investment code was issued in 1994. The mining code, Proclamation 68/1995, was issued in March 1995 as was Legal Notice 19/1995, which announced mining industry regulations. Within the Ministry of Energy, Mining, and Water Resources, a Mines Control Department and a Geological Survey were functioning. Gold and petroleum possibilities attracted a number of international firms. Among more than 15 companies said to be investigating possible gold ventures, specifically mentioned in the press, were Anglo American Corp. (South Africa); Ashanti Goldfields Corp. Ltd. (Ghana); Billiton International Minerals, a unit of Gencor Ltd. (South Africa); Rift Resources Ltd. (Canada); and Broken Hill Propriety Co. Ltd. (BHP), CRA Ltd., and Western Mining Corp. (of Australia). Anadarko Petroleum Corp. was awarded a production sharing agreement on the Zula block offshore in the Red Sea.

The nation's infrastructure, which suffered severe damage from the 30-year civil war that ended in 1991, was steadily being rehabilitated with financial assistance from a number of countries in the European Union.

More mineral activity appeared to be likely as a result of the Government's steps to enact laws and regulations that offer internationally competitive terms for investment.

## Ethiopia<sup>3</sup>

The minerals industry continued to provide its historically minor contribution to Ethiopia's economy in 1995, although there was more foreign investor activity in the sector. In

mineral commodities, gold again probably provided the highest value for total production and was a major export. Construction materials—including brick clay; cement, with its main components of limestone and shale and/or clay; gypsum for cement and plaster; sand and gravel; crushed and dimension stone; and the like—were also important mineral commodities. Petroleum refinery products were important in the past, but the refinery location was in Assab, which became part of Eritrea in May 1993, as did the principal salt production facilities on the Red Sea. A variety of other minerals were also produced. (*See table 1.*)

Additional valuable minerals, such as lignite, natural gas, phosphate, and potash, are known to occur in deposits of potentially economic size and grade in various parts of the country. A mountainous high plateau in the northwestern half of the country is capped mostly by thick Tertiary basalt flows rather barren of valuable mineral deposits. But Precambrian basement, hosting many metallic and industrial mineral resources, is exposed in deep river gorges and along the edges of the basalt cap, particularly in the far northern highlands and in the western and southern lowlands. Drainage, with high potential for hydroelectric power, is mostly westward into the Nile River system. Splitting the country about in half, a major rift valley extends southwesterly from Djibouti in the northeast to Lake Turkana in the southwest. That valley is the locale for a number of evaporite and other industrial mineral deposits, salt lakes, and geothermal sources. The eastern one-third of the country, mainly covered by Mesozoic sediments, offers construction materials sources and oil and gas targets. Oil and gas evidence also was found in the southwestern lowlands near the Sudan.

Under the former central planning, most larger industrial enterprises were state-owned. Privatization was proceeding slowly, although one-stop investment offices were set up in Addis Ababa and in some regions. The Government was actively promoting further mineral development and introduced the Mining Proclamation 52/1993 and the Mining Income Tax Proclamation 53/1993 in June 1993. The new mining laws were designed to offer competitively attractive terms to international investors. A comprehensive set of investment promotion documents on gold, other minerals, country and economic information, and geology and mining was issued late in 1994 by a U.S. consulting firm under contract with the Government and funded by the United Nations (U.N.).

Environmental provisions were included in the new mining laws and implementing regulations. Environmental impact studies were required for submittal with applications both for exploration and for exploitation concessions. Pollution controls and site restoration plans had to be specified in applications. A National Environmental Protection Agency was set up as part of the National Conservation Strategy that

was developed during 1994.

Production reports generally lacked completeness and accuracy, and much of the data was estimated. (*See table 1.*)

Gold was an important export and petroleum products an important import. The Eritrean Ports of Assab and Massawa, together with Djibouti, were newly landlocked Ethiopia's main transshipment points.

The structure of the minerals industry for a number of years was dominated by state-owned companies. One that was very active was the Ethiopian Mineral Resources Development Corp., formed in 1982 to carry out exploration and production of all minerals other than gas, geothermal, and oil resources. It operated the Lega Dembi open pit primary gold mine about 350 kilometers (km) south of Addis Ababa, which had a capacity for producing 3,000 kg/yr of gold ingot with about one-half coming from a gravity plant and the rest from a tank-leach-electrowinning plant. It also ran the Kenticha open pit primary columbite-tantalite mine and pilot plant, apparently about 50 km southeast of Lega Dembi, with an output capacity of 20 t/yr of concentrate. It also managed a smaller placer gold mining operation in the Adola region east of Lega Dembi, producing about 300 kg/yr; operated a soda ash plant at Lake Abiyata about 125 km south of Addis Ababa, capable of producing 20,000 t/yr from the saline lakes in the rift valley; and had projects for developing production of ceramic minerals and gemstones.

Cement plants at Addis Ababa, Dire Dawa, and Muger (the last two about 360 km east-northeast and 60 km northwest of Addis Ababa, respectively) were units of the state-owned Ethiopian Cement Corp. Reports were unclear; but kiln output capacities were indicated as being about 50,000, 20,000, and more than 300,000 t/yr, respectively. Grinding capacities were higher.

Privately owned operations that mostly were producing construction materials ranged from local sand and gravel pits to export-oriented dimension stone quarries at various sites. However, significant gold production (1,500 kg/yr) was attributed to artisanal operations in the north and west, as well as in the south.

A company having both private interests (35%) and Government companies (65%) as shareholders was proceeding with development of motor and household fuels production from the Calub Gasfield in the Ogaden region in the southeast. In addition, a number of international mining and petroleum companies were pursuing exploration projects.

More than 25 companies had active prospecting licenses. Gold headed the list of mineral commodities attracting investment attention during 1995. A Government tender in 1994 led to exploration permits covering three known deposits being awarded early in 1995 to three companies: Golden Star Resources Ltd. of Canada on the Dul deposit near Asosa on the western border with Sudan; Canyon Resources Corp. of the United States on the Megado Serdo

tract and another area, both adjacent to the existing Lega Dembi Mine; and apparently a joint venture of National Mining Corp. of Saudi Arabia and a unit of Boliden AB of Sweden on the Dawa Digati concession, also in the Lega Dembi area. During 1995, the Government requested bids to enlarge and operate the Lega Dembi Gold Mine.

Phosphate production viability from the Bikalal apatite-magnetite deposit about 300 km west of Addis Ababa was to be studied using a \$1.8 million grant from the African Development Bank. The Government also announced plans to study an iron ore production project for the same deposit.

Petroleum exploration concessions in effect included International Petroleum Corp. in the west on the Sudan border and Hunt Oil Co. in the south. In August 1994, a U.S. firm, Afar Exploration Co., was reported to have secured a production-sharing concession for an area in the north near the Eritrean and Djibouti borders. However, in March 1995, it was canceled by the Government because of the company's failure to meet financial commitments.

The physical infrastructure had limitations, primarily associated with war damage. Roads from Addis Ababa to the Red Sea Port of Assab, Eritrea, (about 1,000 km) carried almost 90% of the country's exports. The Government encouraged increased utilization of the railroad from Addis Ababa to the Red Sea Port of Djibouti (about 750 km), which had formerly been a major regional transportation link.

Electric power was of limited availability outside urban areas, but new generation and distribution facilities were planned, especially to utilize the considerable hydroelectric potential. A pilot plant to evaluate geothermal electricity generation near Lake Langano, about 150 km south of Addis Ababa, was announced during 1995.

Water was generally available from river or ground water sources in the minerals-rich areas. Telecommunications were reported reasonably adequate internationally and between regional centers with improvements and expansions planned.

The outlook was for increased activity by domestic and international minerals companies, eventually resulting in increased utilization of Ethiopia's considerable resources.

#### **Somalia<sup>4</sup>**

Continued political instability in 1995 undoubtedly again caused minerals to have an even smaller place than its historically insignificant place in Somalia's economy. For a number of years, officially reported mineral production and trade data have not been available. Even general economic information was scanty. The country was one of the world's least developed; and, prior to the authoritarian Government's overthrow early in 1991, all of industry—with minerals production being only a small part—was estimated typically to contribute less than 10% to the nation's gross domestic product (GDP).

In the past, mineral commodity production normally included cement and its component limestone, clay or shale, and gypsum; calcined gypsum (plaster); refined petroleum products from imported crude; evaporated sea salt; sand and stone; sepiolite (meerschaum); and occasionally very minor amounts of metallic ores and piezo-electric quartz. A few tens of tons per year of meerschaum was the only noteworthy mineral export commodity.

However, before the central Government's collapse, oil and gas prospects in the north and along the eastern coast were attractive to several international companies; and a number of other potentially valuable mineral occurrences were reported by surveys of international agencies. Among these were copper, iron, lead-zinc, manganese, tin, titanium, and uranium. Most of the known mineral occurrences, other than oil and gas, appeared to be associated with exposures of Precambrian rocks—in the northern highlands near and parallel to the coast along the Gulf of Aden, and in low elevations 100 to 250 km west-northwest of Mogadishu—although another area of interest was 300 to 500 km north-northeast of Mogadishu.

Mineral production presumably continued in a limited way during 1995, despite the political chaos, because of the need for cement and crude construction materials and the artisanal nature of meerschaum and salt production. However, the petroleum refinery reportedly was not in operation. (*See table I.*)

The structure of the mineral industry prior to 1991 consisted of a 200,000-t/yr cement plant near Berbera and a 10,000-bbl/d petroleum refinery at Mogadishu, both operated by parastatals (State-owned companies). Production believed to be privately owned and operated included a 1,500 t/yr plaster production facility near Berbera, plus a number of small crude construction material producers, meerschaum, and marine salt, at various locations.

Few mineral deposits had significant reserves. Limestone for cement was generally reported to be abundant. In the north, near the Berbera cement plant, there was a deposit estimated at 30 million metric tons. In the south, large deposits were reported at about 250 km west and at about 250 km north of Mogadishu.

A sepiolite deposit about 350 km north of Mogadishu, near El Bur, was considered to have the most promise for development in a U.N. countrywide minerals appraisal in 1988. The Government earlier stated that the area probably had the world's largest resource of sepiolite.

The U.N. appraisal also considered as worthy of further study some base metal occurrences 200 km west of Berbera. Additionally, other occurrences of potentially valuable minerals were reported with rare references to quantity or grade. Among these were beryl, manganese, heavy metal beach sands, tin-tantalum, uranium, and a number of industrial minerals.

Infrastructure was rather limited. The transport system was poor, with no railroad, and the 5,000-km road network in need of repair. There were three main sea ports at Berbera, Chisimaio, and Mogadishu.

Electric power generation capacity of the public system totaled 70 megawatts with 70% near Mogadishu. There were many small private generating units with estimated total capacity almost equal to the public system. Essentially all were oil fueled units, mostly diesel. Hydroelectric plants were planned near Bardera and near Mogadishu.

Water resources were scanty and unevenly distributed. Wells were the main source of supply. Reasonably reliable surface supplies were only near the two main rivers in the south.

The outlook for mineral production to become important to Somalia's economy was very doubtful. However, resolution of the political strife could bring some prompt oil and gas exploration.

## **Sudan<sup>5</sup>**

Mineral commodities produced in Africa's largest country included cement, chromite, crude construction material, crude oil, gold, gypsum, limestone, petroleum refinery products, and salt. Although the quantities were small in the world view, and the industry contributed very little to Sudan's economy, the country had some potential for increasing output of chromite, gold, and oil and gas, as well as for reviving production of manganese ores and several industrial minerals. Although minerals—mainly chromite, gold, and salt—typically provided less than 1% of export revenues, mineral commodity imports, principally fertilizer, crude oil, petroleum refinery products, and structural steel constituted approximately 50% of total imports.

In general, geological mapping showed that the surface rocks in the eastern one-third of the country composed the western one-half of the granitic Precambrian Nubian-Arabian Craton, separated from the Saudi Arabian one-half by the Red Sea Rift. Those igneous and metamorphic rocks of the basement complex, which formed the Red Sea Hills along Sudan's coast and the Ingeessana Hills further south along the Ethiopian border, were the locales of most of the solid mineral activity in the Sudan.

The Marra Mountains west of Al Fashir and the Nuba Mountains south of El Obeid had granitic Precambrian (Archean) outcrops. In these rocks, base metal, gold, and uranium deposits occurred at various locations. Offshore in the Red Sea and the Tertiary-aged rocks of the south-central lowlands were the locales of petroleum activity. Geologic maps covering the Sudan at a scale of 1:1M, published in 1988, were produced by Robertson Research for the Government.

The costly 12-year-old civil war in the south continued to

be a major problem for the military Government. In addition to direct fiscal effects, it was a major cause of a large displaced population requiring humanitarian aid. The conflict also adversely affected petroleum exploration in the region and prohibited TOTAL SA from approaching its petroleum concessions in the south.

A dispute continued with Egypt over mineral rights in the triangular zone along Sudan's border with Egypt and the Red Sea known as the Halaib area. There were also general border disputes with Eritrea and Uganda.

Government policy codified in the Investment Encouragement Act of 1980 encouraged foreign investments, especially in minerals. That act and the Mines and Quarries Act of 1972 and Regulations of 1973, and the Petroleum Act and Regulations of 1972 and 1973 appeared to be the principal laws affecting the minerals industry, except for radioactive minerals and precious stones, which were treated separately. Early in 1995, it became apparent that, to encourage foreign prospective gold-mining investors, the Government was permitting a 2-month reconnaissance prior to awarding exploration-exploitation concessions. However, the commercial climate continued to be considered less than favorable by some observers because of uncertain Government regulations and procedures.

Environmental degradation was reported to be substantial in the south as a result of the civil war. However, effects of the small-scale mineral activity apparently were not of concern.

The structure of the mineral industry consisted of mostly rather small companies, often producing intermittently, although gold and oil possibilities were attracting larger foreign companies into at least some exploration. State-owned companies had become significant in the early 1970's and remained the sole producers of cement and oil refinery products. They apparently also held equity in the gold producer and produced some crude oil. The parastatals probably continued to participate in chromite and manganese ventures. Private firms began operating again in 1979.

The only known producer, Ariab Mining Co., owned 60% by the Government's Sudanese Mining Co. and 40% by the Mine Or SA, an affiliate of LaSource Compagnie Minière, again increased its output of gold doré bullion. An increase in Ariab's output was anticipated for 1996 with the expansion of the treatment plant's processing capacity to 220,000 t/yr.

Gold-prospecting licenses were the subject of negotiations between the Government and several international companies during 1995. Areas in the Red Sea Hills in the quadrant northwest of Port Sudan, roughly centered about 600 km northeast of Khartoum, as well as areas in the southeast at several places near the borders with Ethiopia, Kenya, and Uganda, were mentioned. Mine Or was negotiating for another mining concession in the north of the country, east of

the Nile. Anglo American Corp. of South Africa and Hong Kong International Co. (identified as a Chinese company) were specifically cited separately in press reports as being interested in the southeast.

Crude oil production by Government entities and/or Romania's Rompetrol group was reported in the Abu Gabra area, about 750 km southwest of Khartoum.

State Petroleum, a subsidiary of Arakis Energy Corp. of Canada, was completing wells in the Heglig field that had been drilled by Chevron. Well test results were encouraging. The company planned to begin commercial production in 1996. However, Arakis' plans for starting construction on a 1,500-km, 85,000-bbl/d pipeline to Port Sudan were postponed after the breakdown of financial negotiations in September 1995.

During 1995, Red Sea Oil Corp. was formed by International Petroleum Corp. (IPC) of Canada. Red Sea Oil subsequently acquired International Petroleum Sudan Ltd. from IPC. International Petroleum Sudan drilled the Suakin-2 well on the offshore Delta Tokar block at the end of the year.

New petroleum companies reported in Sudan consisted of an enterprise that included the Sudanese National Petroleum Co. and the Qatari Petroleum Co. as partners and a separate joint venture between the Governments of Sudan and China.

Oil refinery rehabilitation at Port Sudan was expected to be funded by a loan from the French bank Paribas. The loan reportedly was to be guaranteed by the Government's share of profits from the Ariab gold venture. Apparently owned by a Government entity for some time, the refinery was said to be an old topping plant started up by British Petroleum and Shell in 1964 and had a rated capacity of about 24,000 bbl/d at yearend 1994, although it always had operated at less than 50% of capacity. Additionally, the Government operated a refinery at Abu Gabra, reported to be a small, 2,000 bbl/d topping unit, 750 km southwest of Khartoum. The Government also was reported to be considering construction of another small 5,000-bbl/d refinery.

Reserve data on minerals in the Sudan was not considered sufficiently reliable for publication.

Infrastructure problems in the country were severe. Roads were the primary transportation mode and were badly in need of repair. A 4,800-km railway network linked major cities but was in very poor condition and carried only a fraction of the tonnage it had in the early 1970's. A refined petroleum products pipeline that ran 800 km from Port Sudan to Khartoum was opened in 1977. It mainly handled gasoline and diesel fuel but operated much below capacity, and more fuel was carried by tanker trucks. Port Sudan and nearby Suakin were deepwater ports on the Red Sea.

Electric power shortages were not uncommon, and studies on generation and distribution improvements were a focus of foreign aid. Hydropower was an important component, but liquid-fueled steam-turbine units were widely used. An

additional thermal plant north of Khartoum was planned. New hydro dams and facilities were also being planned but faced opposition because of summertime limits on waterflow as well as additional displacement of people and loss of croplands. The nuclear plant option was being debated, and solar power for rural areas in the west was under study.

The outlook for development of some oil production still appeared promising, though difficult financial hurdles remained. Increased gold output also was probable. However, continued political and economic instability was likely to deter major efforts at further exploiting the remaining mineral potential of Sudan for some time. The generally poor infrastructure was an additional obstacle to any significant mineral production increases.

## Uganda<sup>6</sup>

Uganda's mineral production contribution to the nation's GDP was negligible in 1995; however, minerals could play a significant role in Uganda's economy if efforts to revive the industry succeed. The most successful thrust of the Government was to support a program to recover cobalt from the tailings of the Kilembe Mine. Additional Ugandan mineral deposits reported to have the potential to attract commercial investment include iron ore, gold, phosphate, salt, tin, and tungsten. Many deposits had been the sites of small-scale operations prior to 1980. The U.N. assisted with setting up a Mineral Development Promotion Program during 1992 to aid with mineral information dissemination.

Mineral industry activities were under the charge of the Ministry of Energy, Minerals, and Environmental Protection. Under the newly enacted Constitution, Parliament was authorized to make laws regarding mineral production, royalties, and abandoned mine reclamation. Crude construction minerals such as clay, sand, and stone were excluded from this legislation.

Commonwealth Development Corp., the European Investment Bank, International Finance Corp., and Proparco of France pledged \$80 million for the cobalt-processing project at Kilembe in southwestern Uganda. Banff Resources Ltd. of Canada assumed ownership of the operating company, Kasese Cobalt Co. Ltd. Originally, Kasese Cobalt was owned by the Ugandan Government's Kilembe Mines Ltd. (45%), Bureau de Recherches Géologiques et Minières (BRGM) of France (27.5%), and Barclays Metals Ltd. of the United Kingdom (27.5%). Barclays sold its shares in Kasese to BRGM in 1994, and BRGM's subsequent affiliation with Normandy Poseidon Ltd. of Australia resulted in the creation of LaSource Compagnie Minière, which controlled 55% of Kasese. Banff Resources Ltd. of Canada obtained 65% interest in Kilembe Mines, and LaSource subsequently transferred its 55% interest in Kasese Cobalt to Banff for 75% equity interest in Banff.

Africa Energy and Mining reported that Banff's original intention to restart copper ore mining at the Kilembe Mine was suspended by a less-than-optimistic technical assessment. Plans were to recover 1,000 t/yr of cobalt cathode from the stockpiled copper pyrite tailings at the Kilembe Mine through a bioleach process. Pilot plant trials were done in 1995.

Construction of the biological oxidation, solvent extraction, and electrowinning plant was scheduled for 1996 through 1998. Plant operations were expected to extend over an 11- to 12-year period, generating approximately 5% of world cobalt production and placing Uganda among the major cobalt producers of the world.

Pacific Vangold Mines Ltd. of Canada completed geochemical and surface geophysical surveys and began drilling the Kafunzo nickel-cobalt prospect in southwestern Uganda. The company plans additional drilling and an airborne geophysical program on the concession in 1996. Pacific also was mapping and sampling four gold prospects of Greenstone Minerals of Uganda that it had an option to buy into.

Anglo American Prospective Services obtained a cobalt and nickel prospecting license in the southwest and GHK Resources Ltd. of Canada acquired a 7,600 square kilometer concession 16 km east of Kilembe. It was reported that Central African Resources, Roraima Mining, KES Resources, and BHP were granted gold-prospecting licenses.

The Government continued work on phosphate extraction research at the Tororo apatite deposits. The Gujarat State Fertiliser Co. of India was negotiating a joint venture with the Ugandan Government to set up a fertilizer plant at Tororo.

The Government again attempted to interest investors in restarting operations at the Lake Katwe salt plant. The plant was idled in the early 1980's.

The Rawal Group had purchased the Hima cement plant from the Government-owned Uganda Cement Corp. in December 1994. The group planned to rehabilitate the plant's existing capacity and then expand.

Uganda General Works and Engineering Corp. of the United States signed a production sharing agreement in February 1995 on block 2 in Lake Albert. The company spent the rest of the year attempting to secure financing for its proposed exploration activities. At midyear, the Government agreed to set up a border region petroleum information exchange and exploration program with Zaire.

The Nile Independent Power was negotiating with the Government to build a private hydroelectric power station downstream from the Owen Falls dam. The company planned to sell power to the Uganda Electricity Board and the export market. Nile Independent Power was a joint venture between the AES Corp. of the United States and Madhvani International of India.

Mineral production was expected to rapidly expand through the turn of the century. The anticipated increase in mineral exports should augment the country's foreign exchange revenues and attract additional investment in the mineral industry.

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<sup>1</sup>Text prepared Oct. 1995 by Lloyd E. Antonides, updated Mar. 1996 by P. M. Mobbs.

<sup>2</sup>Text prepared Oct. 1995 by Lloyd E. Antonides, updated Apr. 1996 by P. M. Mobbs.

<sup>3</sup>Text prepared Oct. 1995 by Lloyd E. Antonides, updated Apr. 1996 by P. M. Mobbs.

<sup>4</sup>Text prepared Apr. 1995 by Lloyd E. Antonides, updated Apr. 1996 by P. M. Mobbs.

<sup>5</sup>Text prepared Sept. 1995 by Lloyd E. Antonides, updated Apr. 1996 by P. M. Mobbs.

<sup>6</sup>Text prepared Apr. 1996 by P. M. Mobbs.

## Major Sources of Information

### Ministry of Industry, Energy and Mining

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Fax: 256-41-230-220

## Major Publications

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TABLE 1  
OTHER COUNTRIES OF EAST AFRICA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995 e/
<b>ERITREA 3/</b>					
Basalt	XX	XX	XX	114,483	233,555 4/
Cement	XX	XX	XX	300,000 e/	350,000
Clays:	XX	XX	XX	62,970	88,676 4/
Brick 5/	XX	XX	XX	5,800 e/	23,750
Kaolin	XX	XX	XX	5,231	1,328 4/
Coral	XX	XX	XX	74,404	78,603 4/
Feldspar	XX	XX	XX	6,823	-- 4/
Gold kilograms	XX	XX	XX	78	59 4/
Granite	XX	XX	XX	43,803	82,007 4/
Gravel	XX	XX	XX	80,622	422,541 4/
Gypsum	XX	XX	XX	15	20 4/
Lime	XX	XX	XX	6,294	6,955 4/
Limestone	XX	XX	XX	400,000 e/	450,000
Marble 6/	XX	XX	XX	190	3,869 4/
Pumice	XX	XX	XX	183	233 4/
Quartz	XX	XX	XX	488	276 4/
Salt	XX	XX	XX	207,836	254,700 4/
Sand	XX	XX	XX	464,883	911,508 4/
Silica sand	XX	XX	XX	38,014	-- 4/
Talc	XX	XX	XX	3	-- 4/
Petroleum products thousand 42-gallon barrels	XX	XX	XX	5,150	4,336 4/
<b>ETHIOPIA e/ 7/ 8/</b>					
Cement, hydraulic	290,000	320,000	350,000	464,396	611,437
Clays: 5/					
Brick	14,000	15,000 e/	15,000 e/	10,000 e/	7,000
Kaolin (China clay)	370	420	500	--	--
Diatomite	1 4/	5	10	150	150
Gold, mine output, Au content 9/ kilograms	3,038	2,224	3,387	2,370	4,500
Gypsum and anhydrite, crude 5/ 10/	1,750	2,650	2,500	30,700	54,000
Lime	45 4/	100	100	2,700	3,000
Petroleum refinery products thousand 42-gallon barrels	3,600	2,530 4/	4,000	--	--
Platinum, mine output, Pt content 11/ grams	1,000	500	--	--	--
Pumice 5/	37,000	49,000	40,000	127,000	360,000
Salt:					
Marine	85,000	100,000	120,000	--	--
Rock	8,000	10,000	10,000	5,000	5,000
Scoria	8,500	8,000	8,000	7,000	7,000
Soda ash, natural	18,465 4/	500	248 4/	2,150 4/	20,000
Stone, sand and gravel: 5/					
Construction stone, crushed thousand tons	2,640	860	1,000	300	750
Dimension stone	2,800	2,000	3,000	42,000	38,000
Limestone 10/ thousand tons	90	100	100	700	3,215,000
Sand 12/ do.	1,000	700	1,000	6,040	1,600
Tantalite, concentrate (40% Ta <sub>2</sub> O <sub>5</sub> )	10 4/	14	17 4/	26 4/	20
<b>SOMALIA e/ 13/</b>					
Cement, hydraulic	10,000	25,000	25,000	25,000	25,000
Gypsum	1,000	2,000	2,000	2,000	2,000
Limestone 14/	17,000	40,000	40,000	40,000	40,000
Petroleum refinery products thousand 42-gallon barrels	360	--	--	--	--
Salt, marine	500	1,000	1,000	1,000	1,000
Sepiolite (meerschaum)	4	2	5	5	6
<b>SUDAN e/ 15/</b>					
Cement, hydraulic	170,000	250,000	250,000	250,000	250,000
Chromium, chromite, mine output, gross weight 16/	10,000	10,000	11,500	25,000	25,000
Gold, mine output, Au content kilograms	50	1,000	1,600	3,000	3,700
Petroleum:					
Crude (including lease condensate) thousand 42-gallon barrels	--	110	360	730	730
Refinery products do.	7,800	7,500	7,500	7,500	7,500
Salt	75,000	75,000	75,000	75,000	75,000

See footnotes at end of table.

TABLE 1--Continued  
OTHER COUNTRIES OF EAST AFRICA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995 e/
UGANDA e/					
Cement, hydraulic	50,000	50,000	50,000	125,000 r/ e/	130,000
Gold kilograms	--	1,800	1,800	1,800	2,000
Iron ore	--	132	130	130	130
Lime, hydrated and quick	2,000	1,500 4/	1,500	1,500	1,500
Phosphate minerals, apatite	100	100	100	100	100
Salt, evaporated	5,000	5,000	5,000	5,000	5,000
Tin, mine output, Sn content	25	30 4/	30	30	30
Tungsten, mine output, W content	4	66 4/	60	60	60

e/ Estimated. r/ Revised. XX Not applicable.

1/ Includes data available through Apr. 25, 1996.

2/ In addition to the commodities listed, a variety of industrial minerals and construction materials (clays, gypsum, sand and gravel, and stone) presumably are produced, but quantity is not reported, and information is inadequate to make reliable estimates of output.

3/ Eritrea became independent in May 1993. Prior production reported under Ethiopia.

4/ Reported figure.

5/ When reported as volume or pieces, conversions to metric tons are estimated.

6/ In addition to tonnage listed in table, 108,545 square meters of marble were produced for the construction industry in 1995.

7/ Data are for year ending July 7 of the year listed. For 1993, some production (particularly cement and component limestone, shale or clay, gold, gypsum, petroleum refinery products, salt, and stone) may be in Eritrea, which became independent in May 1993.

8/ In addition to the commodities listed, some lignite and semiprecious gemstones reportedly were produced, and silver was reportedly contained in gold ingots from the Lege Dembi Mine, but information is inadequate to reliably estimate output.

9/ Additional artisanal gold reportedly was normally produced (estimated at 1,500 kilograms per year according to a Government official in 1994), and there may have been other production, but information is inadequate to reliably estimate output.

10/ Apparently does not include production for cement manufacture, except possibly for 1994. Normally, the manufacture of 1 ton of cement requires 30 to 50 kilograms of gypsum as well as 1.3 to 1.8 tons of limestone and up to 0.5 ton of shale and/or clay.

11/ No platinum production was officially reported after 1988. However, some artisanal platinum probably continued to be produced, and platinum was also reported by others as being contained in gold ingots from the Lege Dembi gold mine, which started up in 1990; but information is inadequate to reliably estimate output.

12/ May include gravel.

13/ In addition to commodities listed, various crude construction materials (e.g., clays, sand and gravel, crushed and dimension stone) and limestone for lime manufacture and/or agriculture are presumably produced; also clay and/or shale are normally produced for cement manufacture, however, available information is inadequate to make reliable estimates of output.

14/ Estimated for cement manufacture only.

15/ In addition to the commodities listed, the following are presumably produced but available information is inadequate to reliably estimate output: clay and/or shale for cement manufacture (normally about 0.4 ton clay and/or shale per ton of finished cement); gypsum for cement manufacture (about 0.04 ton per ton of finished cement) and plaster; limestone for cement manufacture (normally at least 1.25 ton per ton of finished cement), agriculture, lime manufacture, and construction aggregate and fill; and other locally used construction materials (clays, sand and gravel, stone, et al.). Also production of manganese ore (48% to 50% manganese) was reported for 1990 at 60,000 metric tons.

16/ Presumed to be ores and concentrates with an estimated average grade of about 48% chromic oxide.